

Plug-in Electric Vehicle Charging Infrastructure *Case Studies*

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Who is CFCI?

- Started in 1999 by 2 former Edison employees
- EVSE and CNG Infrastructure company
- The Past
 - Installed much of legacy infrastructure in 1996-2003 time period
 - Early GM, Toyota, Nissan, Ford, BMW and Honda EV programs
- Current customers include:
 - Disney
 - NRG
 - AQMD
 - Kaiser Permanente
 - BMW (MINI E)
- C-10 Electrical contractor's license
- Woman-owned business
- Fleet of EV and CNG vehicles



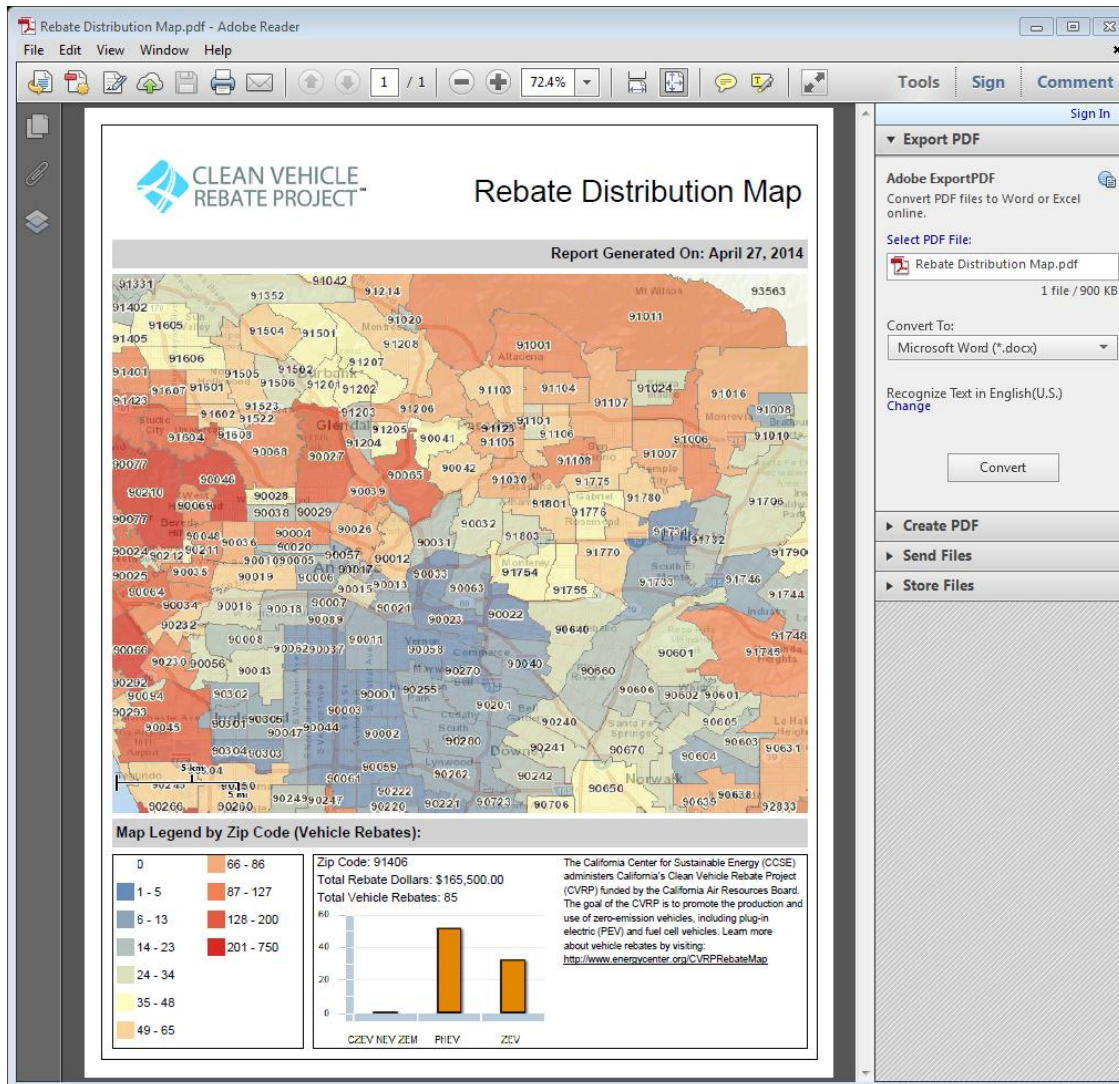


CFCI Products and Services





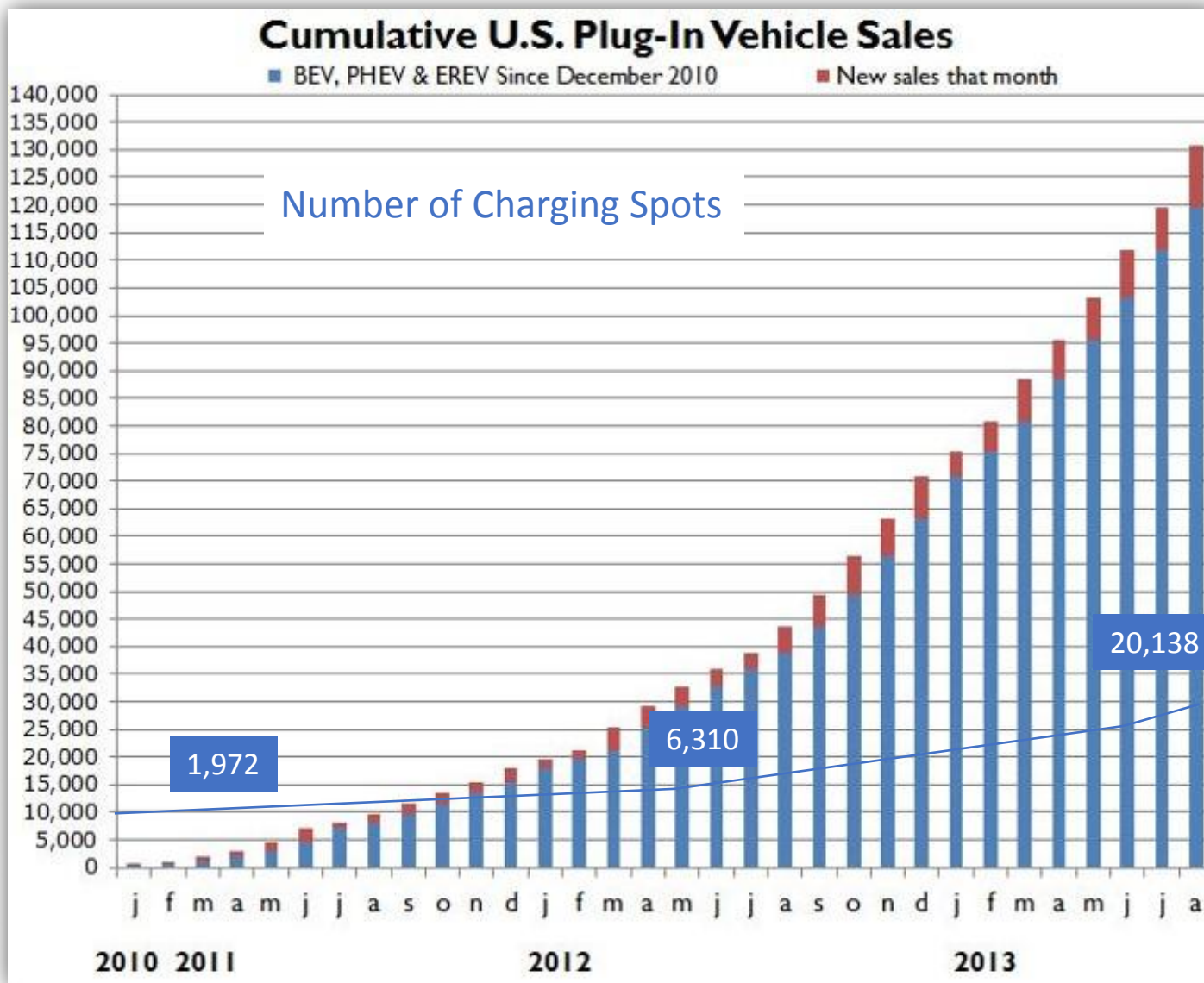
Where Are Cars Being Sold?



- Public charging is still single largest source of dissatisfaction with plug-in vehicles
- Xx percent of drivers have access to charging at work



Charging Infrastructure Lags EV Growth



Infrastructure gap



Case Studies

- Kaiser Permanente
- Disney
- Redwood City
- Friendly Franchises (Carl's Jr.)



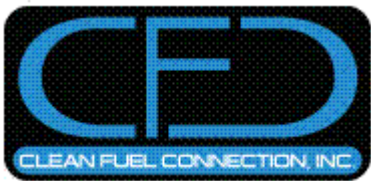
- Mission--Provide workplace, member and guest charging
- Partners—NRG/eVgo, CFCI
- Funding—NRG financing, internal, CEC grant
- Form of Agreement—third party contract to provide service to Kaiser facilities through individual Work Authorizations
- Positives—many employee requests for charging, cooperative and enthusiastic customer
- Challenges—large, complex organization, layers of bureaucracy, no budget



KP Status

- Kaiser Permanente has signed contracts with two vendors, **NRG eVgo** and **Clean Fuel Connection**, to bring Electric Vehicle charging to Kaiser Permanente facilities nationwide
 - 3 year contracts starting December 2013
- The vendors are currently working with **~30 pilot sites** to develop approach and process needed for wider rollout
- Options will be presented to each site in a **customized Master Site Plan** following a site walk and information gathering
- Recently won CEC grant for workplace charging for Kaiser





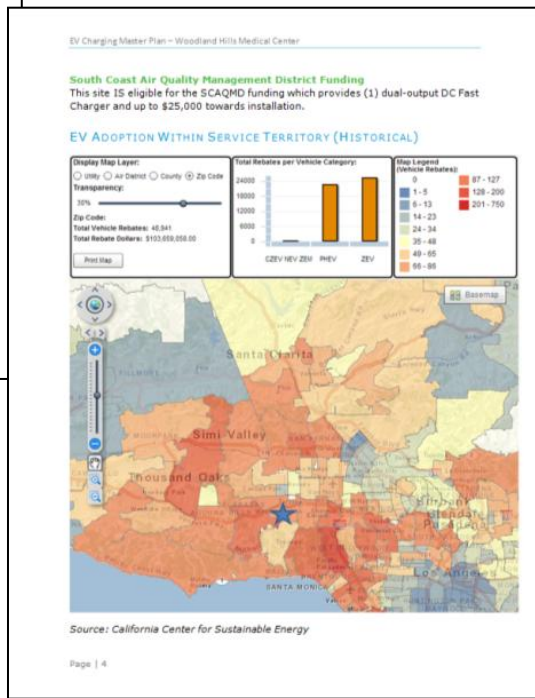
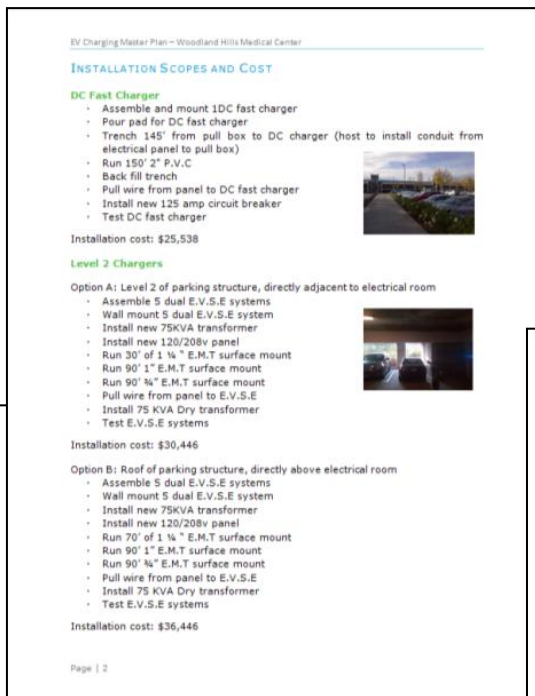
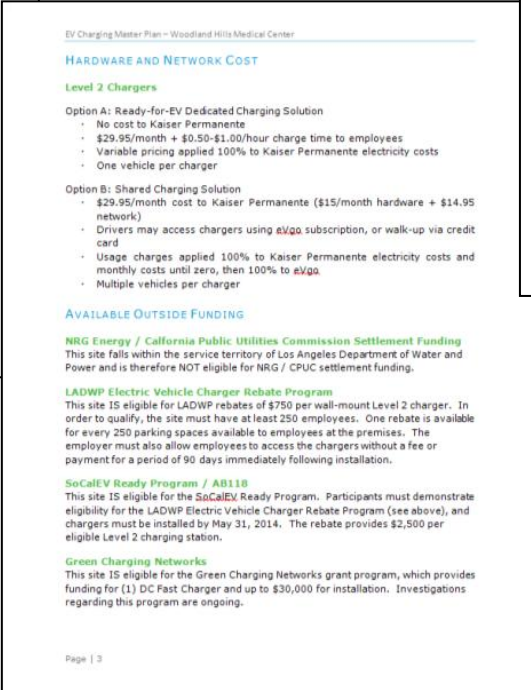
Vendor Services Offered

- Pre-Installation Phase
 - Master site planning
 - Technical consultation
 - Apply for and coordinate grants and incentives on behalf of Kaiser Permanente
- Installation and Post-Installation Phases
 - Provide chargers and network equipment
 - Turnkey installation
 - Manage user access and collect charger fees on behalf of Kaiser
 - Perform all repair and maintenance
 - Electricity reimbursement

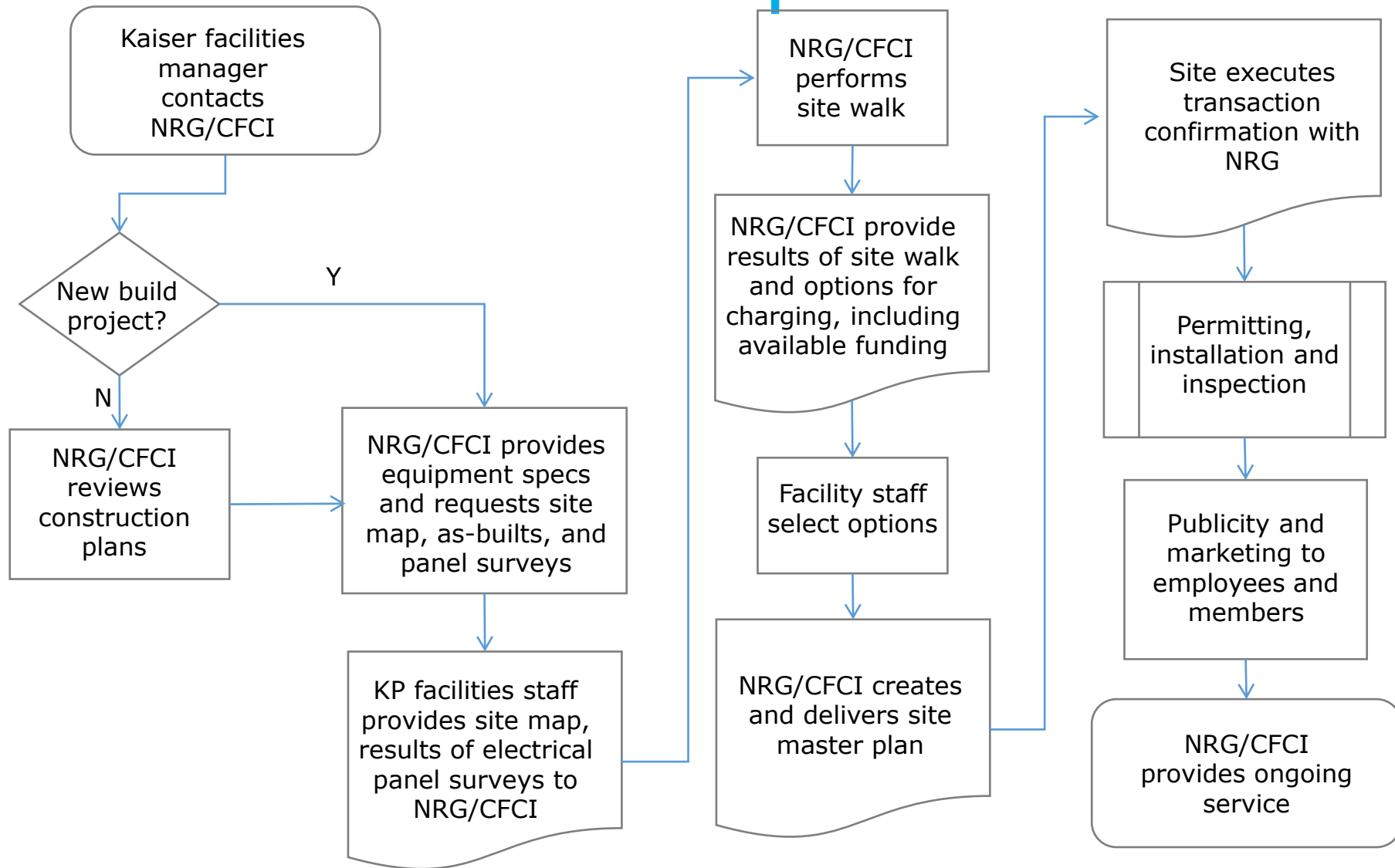




Sample Master Plan



Site Implementation Steps





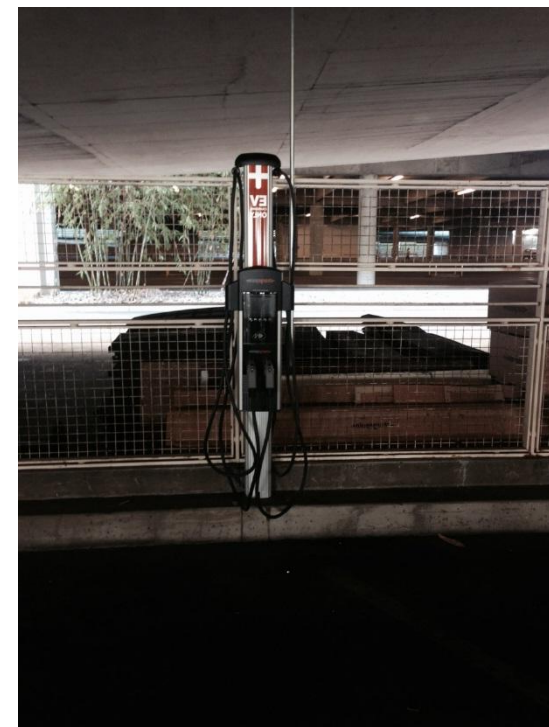
Disney

- Mission--Provide workplace and guest charging
- Partners—ChargePoint, CFCI
- Funding—Internal, new CEC grant
- Form of Agreement—Chargers purchased directly from ChargePoint or CFCI; new installations added to existing contract with CFCI
- Positives—chargers are receiving substantial utilization, high profile and enthusiastic customer, data driven
- Challenges—large, complex organization, budget constraints

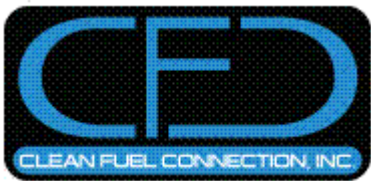


Disney—Status

- Installed ChargePoint workplace units at 5 sites
- Installed ChargePoint public charging at Mickey And Friends
- Under CalStart leadership won CEC grant for Additional public charging at multiple Disney hotels and downtown Disney



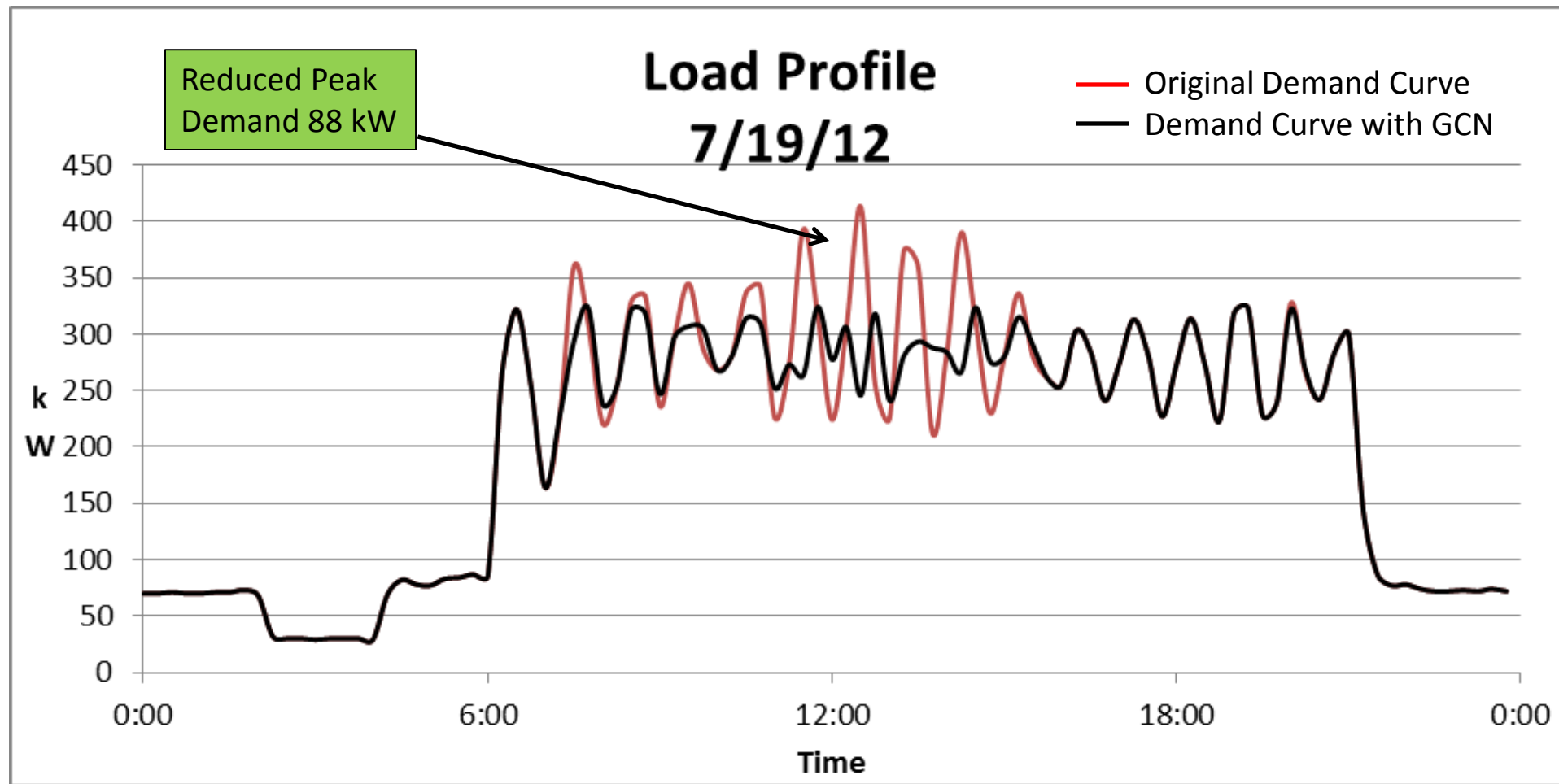
Charging station at Mickey and Friends



- Mission--Provide public DC fast charging with 30kW/30kWh energy storage system to reduce peak demand charges
- Partners—Green Charge Networks, NRG/eVgo, CFCI, ChargePoint, Nissan
- Funding—CEC grant, SGIP, peak energy savings
- Form of Agreement—GCN contract with NRG; CFCI installation contract with NRG
- Positives—solves peak demand issue for DCFC; energy storage shaves facility demand when charger not being used
- Challenges—meeting Nissan program deadlines, utility interconnection agreements, installation costs



SCE Retail Location





GCN System



Green Station – Intelligent energy storage and enterprise data analytics

Green Synergy Client – Advanced data algorithms, reporting and savings analysis





Project sites:

Shore Hotel Santa Monica
49ers Stadium
Peralta College (3 sites)
City of Lancaster
Redwood City (2 sites)
Kaiser Permanente San Rafael
7-11 (4 sites)

Complex Structure

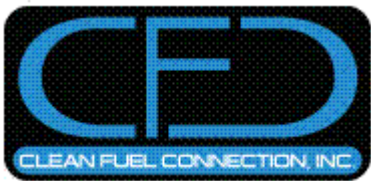
Project Work Breakdown by Contractor/Subcontractor								
	Prime Contractor	Subcontractor	GreenStation™	DC Fast Charger	Contracting	Permitting	Engineering & Installation	Network Service Provider
GCN	X		X		X	X		
CFCI		X					X	
ChargePoint		X						X
Nissan				X				



Friendly Franchises (Carl's Jr.)

- Mission—Meet City of LA Condition of Approval
- Partners—ChargePoint, CFCI
- Funding—Internal
- Form of Agreement—CFCI sold and installed ChargePoint units
- Positives--High profile customer, ROI driven
- Challenges—Personnel turnover, compliance driven





Friendly Franchises: ROI Calculator

	Costs	4 cars per day
A	Electricity Cost per kwh	\$ 0.13
B	kilowatts used per hour	7.2
C	Average stay per vehicle (hours)	0.5
D	Average usage per vehicle (kwh)	3.6
E	Number of cars charging per day	4
D	Cost per charger per day	\$ 1.87
F	Days per year charger is used	300
	Cost per year (A*B*C*E)	\$ 561.60
	Revenue	
A	Per charge cost	\$ 2.00
B	Days Used	300
C	Charges per day	4
D	Revenue per year	\$ 2,400.00
E	Electricity cost per year	\$ 561.60
	Profit per year	\$ 1,838.40

	Costs	2 cars per day
A	Electricity Cost per kwh	\$ 0.13
B	kilowatts used per hour	7.2
C	Average stay per vehicle (hours)	0.5
D	Average usage per vehicle (kwh)	3.6
E	Number of cars charging per day	2
D	Cost per charger per day	\$ 0.94
F	Days per year charger is used	300
	Cost per year (A*B*C*E)	\$ 280.80
	Revenue	
A	Per charge cost	\$ 2.00
B	Days Used	300
C	Charges per day	2
D	Revenue per year	\$ 1,200.00
E	Electricity cost per year	\$ 280.80
	Profit per year	\$ 919.20



In conclusion....

- Many motivations, many models
- Good news: demand from drivers!
- Challenges: internal bureaucracy, funding, ROI

THANK YOU!

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